

Ejercicio 1:

1) a) $33_{(10)} = 100001_{(2)} = 1 \cdot 2^5 + 0 + 0 + 0 + 0 + 1 \cdot 2^0 = 32 + 1 = 33_{(10)}$

$1020_{(10)} = 1 \cdot 2^3 + 0 + 2 \cdot 2^1 + 0 = 27_{(10)} + 6_{(10)} = 33_{(10)}$

$113_{(9)} = 1 \cdot 5^2 + 1 \cdot 5^1 + 3 \cdot 5^0 = 25_{(10)} + 5_{(10)} + 3_{(10)} = 33_{(10)}$

$100_{(10)} = 1 \cdot 2^6 + 1 \cdot 2^5 + 0 + 0 + 1 \cdot 2^2 + 0 + 0 = 64_{(10)} + 32_{(10)} + 4_{(10)} = 100_{(10)}$

$10201_{(10)} = 1 \cdot 5^4 + 0 + 2 \cdot 5^2 + 0 + 1 \cdot 5^0 = 87_{(10)} + 18_{(10)} + 1_{(10)} = 100_{(10)}$

$400_{(5)} = 4 \cdot 5^2 + 0 + 0 = 4 \cdot 25_{(10)} = 100_{(10)}$

$1023_{(10)} = 1 \cdot 3^6 + 1 \cdot 3^5 + 0 + 1 \cdot 3^3 + 2 \cdot 3^2 + 0 = 729_{(10)} + 243_{(10)} + 27_{(10)} + 18_{(10)} + 9_{(10)} = 1023_{(10)}$

$111111111_{(3)} = 1 \cdot 2^9 + 1 \cdot 2^8 + 1 \cdot 2^7 + 1 \cdot 2^6 + 1 \cdot 2^5 + 1 \cdot 2^4 + 1 \cdot 2^3 + 1 \cdot 2^2 + 1 \cdot 2^1 + 1 \cdot 2^0 = 512_{(10)} + 256_{(10)} + 128_{(10)} + 64_{(10)} + 32_{(10)} + 16_{(10)} + 8_{(10)} + 4_{(10)} + 2_{(10)} + 1_{(10)} = 1023_{(10)}$

$1023_{(10)} = 1 \cdot 3^6 + 1 \cdot 3^5 + 0 + 1 \cdot 3^3 + 2 \cdot 3^2 + 0 = 729_{(10)} + 243_{(10)} + 27_{(10)} + 18_{(10)} + 9_{(10)} = 1023_{(10)}$

$13043_{(5)} = 1 \cdot 5^4 + 3 \cdot 5^3 + 0 + 4 \cdot 5^1 + 3 \cdot 5^0 = 625_{(10)} + 375_{(10)} + 20_{(10)} + 15_{(10)} = 1023_{(10)}$

$111_{(3)} = 1 \cdot 2^3 + 1 \cdot 2^2 + 1 \cdot 2^1 + 1 \cdot 2^0 = 8 + 4 + 2 + 1 = 15_{(10)}$

$111_{(3)} = 1 \cdot 3^3 + 1 \cdot 3^2 + 1 \cdot 3^1 + 1 \cdot 3^0 = 27 + 9 + 3 + 1 = 40_{(10)}$

$1111_{(5)} = 1 \cdot 5^3 + 1 \cdot 5^2 + 1 \cdot 5^1 + 1 \cdot 5^0 = 125 + 25 + 5 + 1 = 156_{(10)}$

$C A F E_{(16)} = 12 \cdot 16^3 + 10 \cdot 16^2 + 15 \cdot 16^1 + 14 \cdot 16^0 = 49152_{(10)} + 2560_{(10)} + 240_{(10)} + 14_{(10)} = 51966_{(10)}$

$30_{(3)} = 3 \cdot 5^1 + 0 = 3 \cdot 5_{(10)} = 15_{(10)} = 17_{(8)}$

$B A B A_{(13)} = 11 \cdot 13^3 + 10 \cdot 13^2 + 11 \cdot 13^1 + 10 \cdot 13^0 = 24167 + 1690 + 143 + 10 = 26010_{(10)}$

$26010_{(16)} = 2 \cdot 16^4 + 6 \cdot 16^3 + 0 \cdot 16^2 + 1 \cdot 16^1 + 0 \cdot 16^0 = 32768 + 2560 + 16 + 0 = 35344_{(10)}$

d) $100101101010101_{(2)}$ Base 4 (grupo de a 2): $10010101010101_{(4)} = 2112221_{(16)}$ Base 8 (grupo de a 3): $001001011010010101_{(8)} = 113245_{(8)}$ Base 16 (grupo de a 4): $100101101010101_{(16)} = 96A5_{(16)}$

$1111011010101101000011101_{(2)}$ Base 4 (grupo de a 2): $111101101010000101010111_{(4)} = 33230231001213_{(16)}$

* Base 8 (grupo de a 3): $0011110110010110100001100111101_{(8)} = 1754550147_{(8)}$

* Base 16 (grupo de a 4): $1111011010101101000011101_{(16)} = FB2D067_{(16)}$